WE CLAIM:

1. A method for determining the mass moment of inertia of an electric motor drive system of a machine, comprising a drive motor and further drive elements arranged downstream of said drive motor, the method comprising:

a) determining a compensation current, which compensates losses occurring at a constant speed of said motor, so that a motor speed of said drive motor remains constant;

b) determining an acceleration current, which generates a defined acceleration of said drive motor when said losses occurring at said constant speed of said drive motor are compensated; and

c) calculating a mass moment of inertia of said electric motor drive system based on said determined acceleration current.

2. The method in accordance with claim 1, wherein said determining said compensation current comprises determining current required for driving said drive motor at said constant speed at at least one motor speed.

3. The method in accordance with claim 2, wherein said at least one motor speed comprises at least two different motor speeds.

4. The method in accordance with claim 2, wherein said at least one speed remains constant during a presettable length of time.

5. The method in accordance with claim 2, wherein to of said at least one

motor speed have the same value, but opposite signs.

6. The method in accordance with claim 5, wherein said determining said compensation current comprises sequentially operating said drive motor at four different speeds, of which respectively two have the same value, but opposite signs.

7. The method in accordance with claim 1, further comprising controlling a number of revolutions of said drive motor.

8. The method in accordance with claim 7, wherein said determined compensation current is formed by the use of a feedforward current of a revolution speed controller.

9. The method in accordance with claim 1, wherein said determining said acceleration current comprises operating said drive motor at two different accelerations.

10. The method in accordance with claim 9, wherein said two accelerations have different signs.

11. The method in accordance with claim 9, wherein each of said two accelerations remains constant for a presettable length of time.

12. The method in accordance with claim 10, wherein each of said two

accelerations remains constant for a presettable length of time.

13. The method in accordance with claim 1, wherein said determining said acceleration comprises forming a difference between a total torque current of said drive motor and said determined compensation current.

14. The method in accordance with claim 1, wherein said calculating comprises equating two formulations of an acceleration of said drive motor.

15. The method in accordance with claim 14, wherein said two formulations comprises representing said acceleration, on the one hand, as a function of said determined acceleration current, and on the other hand as a function of said mass moment of inertia.

16. The method in accordance with claim 1, wherein said calculating comprises determining a mass moment of inertia of a load of said drive system from a difference between a total mass moment of inertia of said drive system and a mass moment of inertia of said drive motor.

17. The method in accordance with claim 16, wherein said calculating further comprises calculating a ratio of said mass moment of inertia of said drive motor to said mass moment of inertia of said load.

18. The method in accordance with claim 17, further comprising displaying said ratio.

19. The method in accordance with claim 18, wherein said displaying is a visual display.

20. The method in accordance with claim 18, wherein said displaying is an audio display.